

CLAIMS:

1. A method of enabling synchronisation of a first and a second signal, the method comprising the steps of
 - deriving a first fingerprint (102) on the basis of a segment of the first signal (101), where the segment of the first signal (101) is unambiguously related with a first synchronisation time point (T_n ; T_{n+1}),
 - deriving a second fingerprint (104) on the basis of a segment of the second signal (103), where the segment of the second signal (103) is unambiguously related with a second synchronisation time point (T_n ; T_{n+1} ; T_m), and
 - supplying the first and second fingerprints (102, 104) to a synchronisation device (200, 300).
2. A method according to claim 1, characterized in that the method further comprises for each given synchronisation time point (T_n ; T_{n+1} ; T_m), storing the derived first fingerprint (102) in a database (203) and/or storing the derived second fingerprint (104) in the same or another database (203).
3. A method according to claims 1 – 2, characterized in that the first fingerprint (102) and the second fingerprint (104) are transmitted to the synchronisation device (300) via the Internet or via other means.
4. A method according to claims 1 – 3, characterized in that the segment of the first signal (101) and/or the segment of the second signal (103) are unambiguously related with the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m) according to:
 - the segment of the first signal (101) and/or the segment of the second signal (103) ending substantially at the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m),
 - the segment of the first signal (101) and/or the segment of the second signal (103) starting substantially at the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m),

- the segment of the first signal (101) and/or the segment of the second signal (103) starting or ending at a predetermined distance before or after the first and/or second synchronisation time point ($T_n; T_{n+1}; T_m$), or
- the first and/or second synchronisation time point ($T_n; T_{n+1}; T_m$) being at a
5 predetermined time point between a start and an end of the segment of the first signal (101) and/or the segment of the second signal (103).

5. A method according to claims 1 – 4, characterized in that the first ($T_n; T_{n+1}$) and second synchronisation time point ($T_n; T_{n+1}; T_m$) is the same.

10

6. A method according to claims 1 – 4, characterized in that the first synchronisation time point ($T_n; T_{n+1}$) is different from the second synchronisation time point ($T_n; T_{n+1}; T_m$) and in that the method comprises the step of storing a first representation of a relationship between the first synchronisation time point ($T_n; T_{n+1}$) and a first time point of a
15 reference time (107) and storing a second representation of a relationship between the second synchronisation time point ($T_n; T_{n+1}; T_m$) and a second time point of said reference time (107).

7. A method according to claims 1-6, characterized in that the method further comprises the steps of:

- 20 - transmitting the first and/or second representation to a synchronisation device (300), and/or
- transmitting the first and/or second representation to a server (600) in communications connection with a synchronisation device (300), and/or
- transmitting the one or more derived first fingerprints (102) and second fingerprints
25 (104) to the server (600).

8. A method of synchronising two or more signals, the method comprising the steps of:

- generating a first fingerprint stream (105) on the basis of a first signal (101),
- 30 - generating a second fingerprint stream (106) on the basis of a second signal (103),
- comparing a segment of the first fingerprint stream (105) with one or more first fingerprints (102) stored in at least one database (203) in order to determine if a match exists or not,

- comparing a segment of the second fingerprint stream (106) with one or more second fingerprints (104) stored in the at least database (203) in order to determine if a match exists or not, and
- if a match exists for both a first and a second fingerprint (102; 104) determining a location of a first synchronisation time point (T_n, T_{n+1}) for the first signal (101) and a location of a second synchronisation time point ($T_n, T_{n+1}; T_m$) for the second signal (103) and synchronising the first (101) and the second (103) signal using the determined locations.

9. A method according to claim 8, characterized in that the step of synchronising comprises: delaying either the first (101) or the second (103) signal by an amount equal to a difference, if any, between the location of the first synchronisation time point (T_n, T_{n+1}) for the first signal (101) and the location of the second synchronisation time point ($T_n, T_{n+1}; T_m$) for the second signal (103).

10. A method according to claims 8 – 9, characterized in that the location of the first and/or the second synchronisation time point ($T_n, T_{n+1}; T_m$) for the first/and the second signal (101, 103) are given by an unambiguous relation with a segment of a first signal (101) and/or a segment of a second signal (103) used during generation of the matching first fingerprint (102) and of the matching second fingerprint (104).

11. A method according to claims 8 – 10, characterized in that the first and second synchronisation time point ($T_n; T_{n+1}; T_m$) is the same.

12. A method according to claims 8 – 10, characterized in that the first and second synchronisation time point ($T_n; T_{n+1}; T_m$) is different and in that the method further comprises:

- if a match exists for both a first and a second fingerprint (102; 104)
- obtaining a first representation of a relationship between the first synchronisation time point ($T_n; T_{n+1}$) and a first time point of a reference time (107),
- obtaining a second representation of a relationship between the second synchronisation time point ($T_n; T_{n+1}; T_m$) and a second time point of said reference time (107), and
- using the first and second time points of said reference time (107) to synchronise the first (101) and the second signal (103),

- instead of
- determining, if a match exists for both a first and a second fingerprint (102; 104), a location of a first synchronisation time point (T_n, T_{n+1}) for the first signal (101) and a location of a second synchronisation time point ($T_n, T_{n+1}; T_m$) for the second signal (103) and synchronising the first (101) and the second (103) signal using the determined locations.

13. A method according to claim 12, characterized in that the method further comprises the steps of:

- receiving the first and/or second representation in a synchronisation device (300) from a server (600) in communications connection with the synchronisation device (300), and/or
- receiving the one or more first fingerprints (102) and second fingerprints (104) from the server (600).

15

14. A method according to claims 1 – 8 or claims 9 – 13, characterized in that said first signal (101) is an audio signal, said second signal (103) is a video signal, said first fingerprint (102) is an audio fingerprint, and said second fingerprint (104) is a video fingerprint.

20

15. A device (200) for synchronising at least two signals, the device comprising a fingerprint generator (202) adapted to

- to derive a first fingerprint (102) on the basis of a segment of a first signal (101), where the segment of the first signal (101) is unambiguously related with a first synchronisation time point ($T_n; T_{n+1}$), and
- to derive a second fingerprint (104) on the basis of a segment of a second signal (103), where the segment of the second signal (103) is unambiguously related with a second synchronisation time point ($T_n; T_{n+1}; T_m$).

25

30 16. A device according to claim 15, characterized in that the device further comprises at least one database (203) having stored the derived first fingerprint (102) and/or the derived second fingerprint (104) for each given synchronisation time point ($T_n; T_{n+1}; T_m$).

PHNL030888

PCT/IB2004/051259

20

17. A device according to claims 15 – 16, characterized in that the device further comprises a transmitter (204) for transmitting the one or more derived first fingerprints (102) and second fingerprints (104) in the at least one database (203) to a synchronisation device (300) via the Internet or via other means.

5

18. A device according to claims 15 – 17, characterized in that the segment of the first signal (101) and/or the segment of the second signal (103) are unambiguously related with the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m) according to:

- the segment of the first signal (101) and/or the segment of the second signal (103) ending substantially at the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m),
- the segment of the first signal (101) and/or the segment of the second signal (103) starting substantially at the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m),
- the segment of the first signal (101) and/or the segment of the second signal (103) starting or ending at a predetermined distance before or after the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m), or
- the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m) being at a predetermined time point between a start and an end of the segment of the first signal (101) and/or the segment of the second signal (103).

20

19. A device according to claims 15 – 18, characterized in that the first synchronisation time point (T_n ; T_{n+1}) and the second synchronisation time point (T_n ; T_{n+1} ; T_m) is the same.

25

20. A device according to claims 15 – 18, characterized in that the first synchronisation time point (T_n ; T_{n+1}) is different from the second synchronisation time point (T_n ; T_{n+1} ; T_m) and in that the device comprises the means adapted to store a first representation of a relationship between the first synchronisation time point (T_n ; T_{n+1}) and a first time point of a reference time (107) and store a second representation of a relationship between the second synchronisation time point (T_n ; T_{n+1} ; T_m) and a second time point of said reference time (107).

30

PHNL030888

PCT/IB2004/051259

21

21. A device according to claim 20, characterized in that the device further comprises:

- a transmitter (204) for transmitting the first and/or second representation to a synchronisation device (300), and/or
- 5 - a transmitter (204) for transmitting the first and/or second representation to a server (600) in communications connection with a synchronisation device (300), and/or
- a transmitter (204) for transmitting the one or more derived first fingerprints (102) and second fingerprints (104) to the server (600).

10 22. A synchronisation device (300) for synchronising two or more signals, the device comprising:

- means (302) for generating a first fingerprint stream (105) on the basis of a first signal (101),
- means (302) for generating a second fingerprint stream (106) on the basis of a second
15 signal (103),
- means (302) for comparing a segment of the first fingerprint stream (105) with one or more first fingerprints (102) stored in at least one database (203) in order to determine if a match exists or not,
- means (302) for comparing a segment of the second fingerprint stream (106) with one
20 or more second fingerprints (104) stored in the at least one database (203) in order to determine if a match exists or not, and
- means (302) for, if a match exists for both a first and a second fingerprint (102; 104), determining a location of a first synchronisation time point (T_n ; T_{n+1}) for the first signal (101) and determining a location of a second synchronisation time point (T_n ;
25 T_{n+1} ; T_m) for the second signal (103) and means (303) for synchronising the first (101) and the second (103) signal using the determined locations.

23. A device according to claim 22, characterized in that the means (303) for synchronising is adapted to: delay either the first (101) or the second (103) signal by an
30 amount equal to a difference, if any, between the location of the synchronisation time point (T_n ; T_{n+1}) for the first signal (101) and the location of the synchronisation time point (T_n ;
 T_{n+1} ; T_m) for the second signal (103).

PHNL030888

PCT/IB2004/051259

22

24. A device according to claims 22 – 23, characterized in that the location of the first and/or second synchronisation time point (T_n ; T_{n+1} ; T_m) for the first and/or second signal (101, 103) are given by an unambiguous relation with a segment of a first signal (101) and/or a segment of a second signal (103) used during generation of the matching first fingerprint (102) and of the matching second fingerprint (104).

25. A device according to claims 22 – 24, characterized in that the first and second synchronisation time point (T_n ; T_{n+1} ; T_m) is the same.

26. A device according to claims 22 – 25, characterized in that the first and second synchronisation time point (T_n ; T_{n+1} ; T_m) is different and in that the device further comprises:

- if a match exists for both a first and a second fingerprint (102; 104),
- a receiver (204) for obtaining a first representation of a relationship between the first synchronisation time point (T_n ; T_{n+1}) and a first time point of a reference time (107),
- a receiver (204) for obtaining a second representation of a relationship between the second synchronisation time point (T_n ; T_{n+1} ; T_m) and a second time point of said reference time (107), and
- synchronisation means (303) for using the first and second time points of said reference time (107) to synchronise the first (101) and the second signal (103),
- instead of comprising
- means (302) for, if a match exists for both a first and a second fingerprint (102; 104), determining a location of a first synchronisation time point (T_n ; T_{n+1}) for the first signal (101) and determining a location of a second synchronisation time point (T_n ; T_{n+1} ; T_m) for the second signal (103) and means (303) for synchronising the first (101) and the second (103) signal using the determined locations.

27. A device according to claim 26, characterized in that the device further comprises:

- a receiver (204) for receiving the first and/or second representation in a synchronisation device (300) from a server (600) in communications connection with the synchronisation device (300), and/or
- a receiver (204) for receiving the one or more first fingerprints (102) and second fingerprints (104) from the server (600).

PHNL030888

PCT/IB2004/051259

23

28. A device according to claims 15 – 21 or claims 22 – 27, characterized in that said first signal (101) is an audio signal, said second signal (103) is a video signal, said first fingerprint (102) is an audio fingerprint, and said second fingerprint (104) is a video fingerprint.

5

29. A computer readable medium having stored thereon instructions for causing one or more processing units to execute the method according to any one of claims 1 – 8 or any one of claims 9 – 14.